

NAME:

DATE:

Unit-2 Mastery Assessment (version 636)

Question 1 (10 points)

Let f represent a function. If $f[20] = 50$, then there exists a knowable solution to the equation below.

$$y = \frac{f[4(x-9)]}{2} - 8$$

Find the solution.

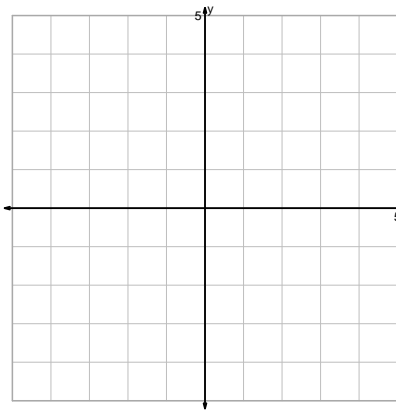
$$x =$$

$$y =$$

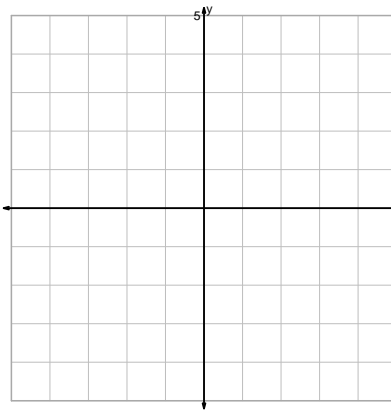
Question 2 (20 points)

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

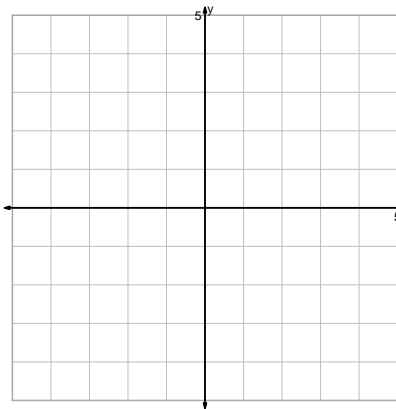
$$y = 2 \cdot x^3$$



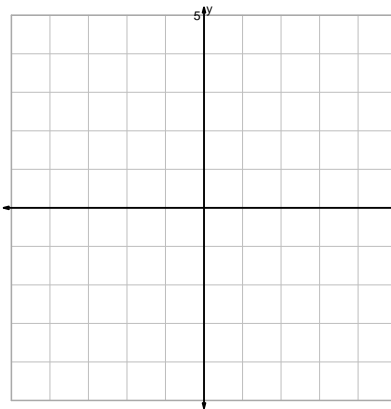
$$y = \log_2(x+2)$$



$$y = \sqrt{2x}$$

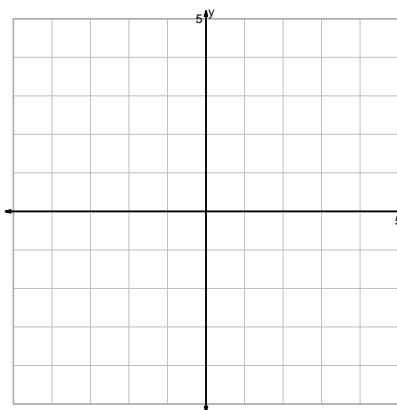


$$y = -\sqrt{x}$$

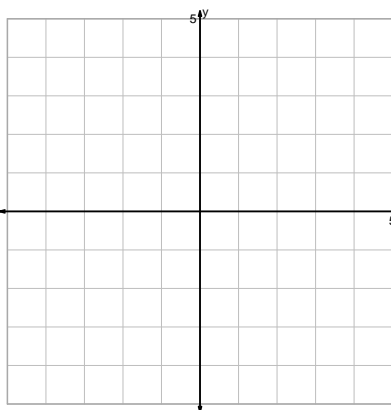


Question 2 continued...

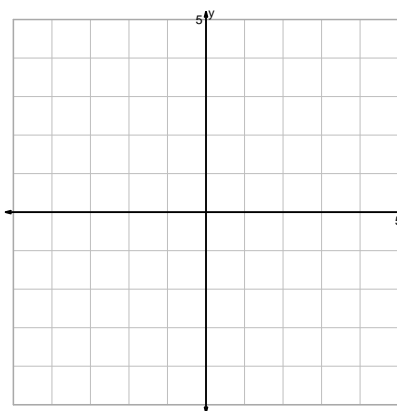
$$y = \sqrt[3]{\frac{x}{2}}$$



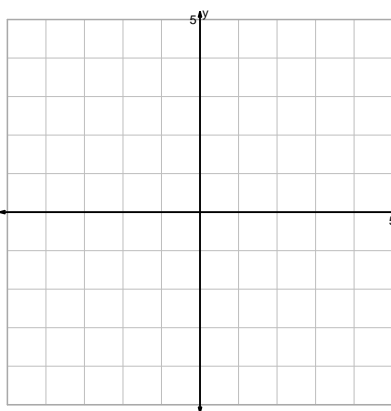
$$y = \log_2(-x)$$



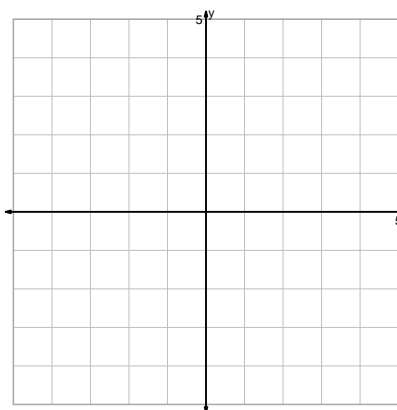
$$y = (x - 2)^2$$



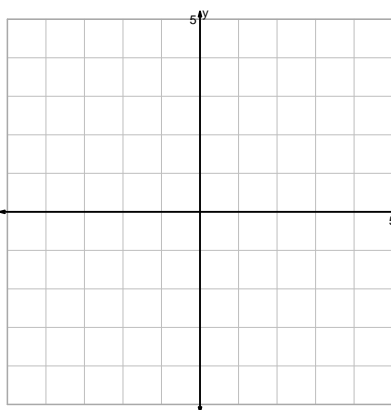
$$y = x^2 + 2$$



$$y = \frac{2^x}{2}$$

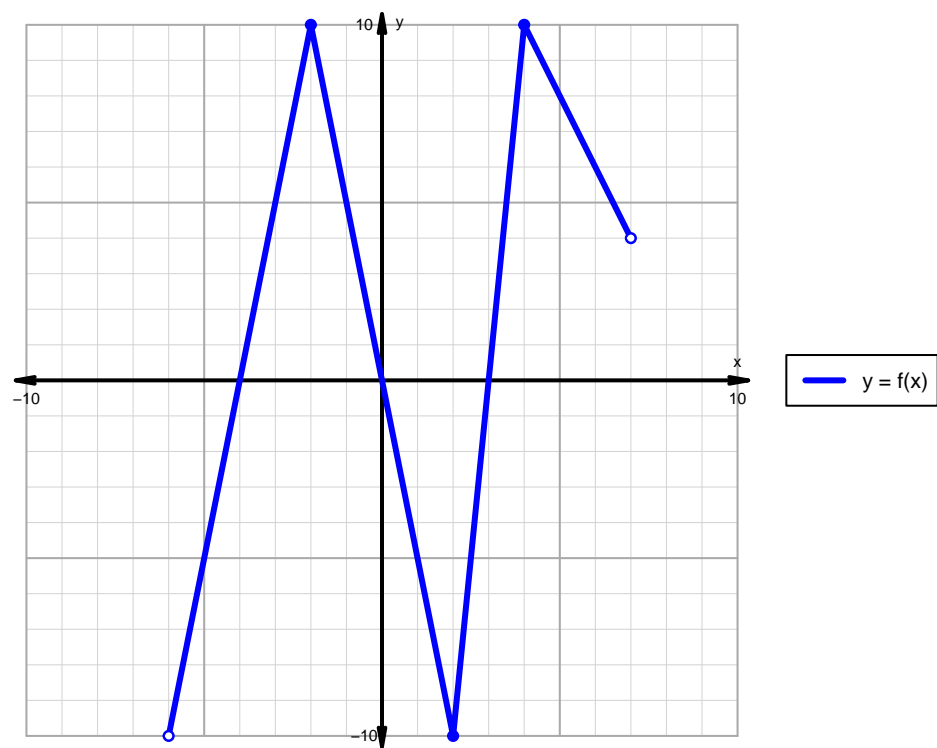


$$y = \sqrt[3]{x} - 2$$



Question 3 (20 points)

A function is graphed below.



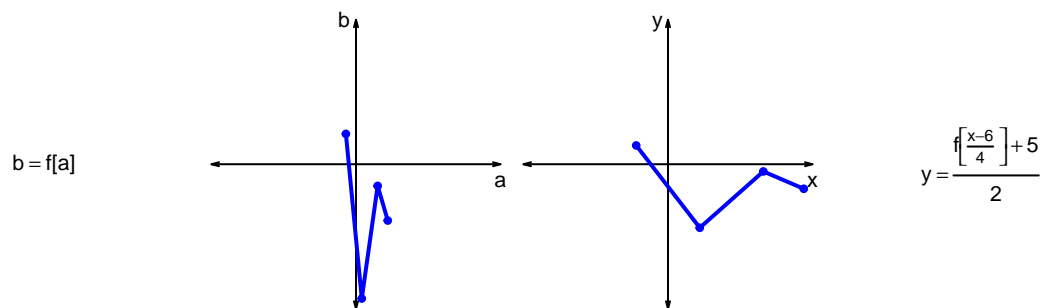
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4 (20 points)

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f\left[\frac{x-6}{4}\right]+5}{2}$ are represented below in a table and on graphs.

a	b	x	y
-7	21	-22	13
4	-93	22	-44
15	-15	66	-5
22	-39	94	-17



- a. Write formulas for calculating x from a and calculating y from b . (Or, write the coordinate transformation formula.)

- b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f\left[\frac{x-6}{4}\right]+5}{2}$?

Question 5 (10 points)

A parent square-root function is transformed in the following ways:

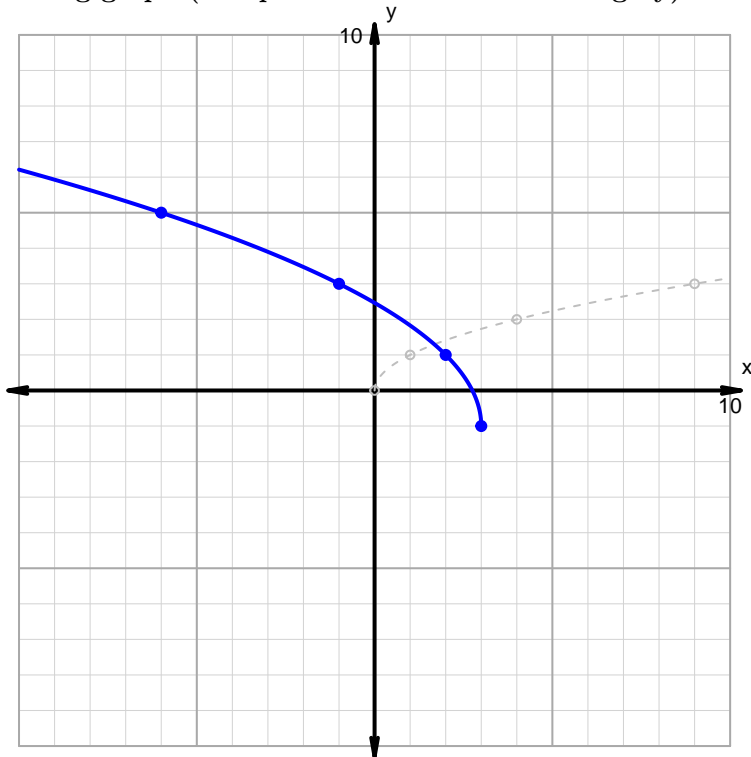
Horizontal transformations

1. Horizontal reflection over y axis.
2. Translate right by distance 3.

Vertical transformations

1. Vertical stretch by factor 2.
2. Translate down by distance 1.

Resulting graph (and parent function in dashed grey):



- What is the equation for the curve shown above?

Question 6 (20 points)

Make an accurate graph, and describe locations of features.

$$y = -3 \cdot |x - 7| + 6$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	